## REMARKS/ARGUMENTS

This letter is responsive to the Office Action mailed on January 19, 2007. Accordingly, this response is accompanied with a request for a one-month extension of time along with the required fees.

### Claim Rejections – 35 USC § 112

The Examiner has rejected claims 5, 6, 10 and 11 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Specifically, the Examiner argued that there is insufficient antecedent basis for the following limitation in the claims: "rectangular, cylindrical, triangular", and has suggested inserting the word "and" before the word "triangular".

In response to the Examiner's comments, the Applicant has followed the Examiner's suggestion and amended the last portions of claims 5, 6, 10 and 11 to read "rectangular, cylindrical, and triangular".

### Claim Rejections - 35 USC § 102

The Examiner has rejected claims 1-6 and 8-11 under 35 U.S.C. 102(b) as being anticipated by Hettlage et al. (US 4,967,170). Specifically, the Examiner argues that Hettlage et al. shows a microwave switch housing assembly, in FIGS. 2 and 3, for operation in a selected frequency range, comprising: a housing (1); a rotor (2) rotatably mounted within said housing; at least one waveguide passage in said rotor; said housing having ports formed therein (A-D) so that in a first position of said rotor, said waveguide passage (3-5) connects said ports and in a second position of said rotor, said waveguide passage is unconnected to said ports (FIG. 2); a power absorbing element located within one of said housing and said rotor (10-13 or 14-17) such that said power absorbing element is positioned adjacent to one end of said waveguide

passage when said rotor is in said second position; said power absorbing element being capable of absorbing electromagnetic energy in said frequency range, so as to reduce the tendency of said waveguide passage to act as a volume resonator when said rotor is in said second position.

The Examiner further argues that the slits shown at 10-13 or 14-17 are chokes that attenuate crosstalk (col. 3, lines 40 to 41), where the slits are air cavities. The Examiner further argued that air can be considered to be an absorbing material for absorbing unwanted crosstalk signals.

In response, the Applicant respectfully submits that the slits (i.e. chokes) taught by Hettlage et al. (hereafter Hettlage) is directed towards a different purpose than the claimed subject matter of the subject application. The chokes taught by Hettlage are directed towards reducing cross-talk between the ports of his switch (see col. 2, lines 8-12 in the Summary of the Invention section and column 3, lines 40-45 in the Description section).

The use of such grooves acting as chokes has been acknowledged by the Applicant in the passage from line 28, page 2 to line 9, page 3 of the application as filed. In this passage, the Applicant notes that these prior art chokes that have been designed to reduce cross-talk are not effective at preventing resonance in these regions of the switch, which result in spurious narrow spikes. Further, the addition of these grooves adds to the complexity of the manufacturing cost of producing the housing assembly of the switch. The Applicant notes that there is no teaching in Hettlage of preventing such resonance nor an acknowledgement of this resonance problem.

In contrast, claim 1 of the subject application recites a microwave switch housing assembly for operation in a selected frequency range, comprising: a housing, a rotor rotatably mounted within said housing, and at least one waveguide passage in said rotor. The housing has ports formed therein so that in a first position of the rotor, the waveguide passage connects the ports and in a second position of the rotor, the

waveguide passage is unconnected to the ports. Furthermore, claim 1 recites a power absorbing element located within one of the housing and the rotor such that the power absorbing element is positioned adjacent to one end of the waveguide passage when the rotor is in the second position. Claim 1 further recites that the power absorbing element is capable of absorbing electromagnetic energy in the frequency range, so as to reduce the tendency of the waveguide passage to act as a volume resonator when the rotor is in the second position.

In addition, the Applicant further submits that the process by which signals are attenuated by the chokes in Hettlage is different from the process by which resonance is prevented in the claimed subject matter. The chokes shown as elements 10-13 or 14-17 in Hettlage comprise a groove placed perpendicular to the leakage path such that a portion of the leaked signal enters the groove. Because the groove is a dead end path (i.e. a short circuit), this signal is reflected back into the gap with a calculated delay such that the reintroduced signal is in anti-phase to the primary leakage. The two superimposed signals then mutually cancel and leakage is suppressed. The chokes function optimally when as little energy as possible is absorbed in the choke, as absorption would diminish the capability of the choke to cancel remaining primary leakage. Accordingly, the chokes operate on the principle that air is almost transparent to radiofrequency signals, and therefore the air in the chokes cannot be characterized as a power absorbing element. In particular, Hettlage employs choke grooves that are narrow and deep to improve the impedance match with the leakage path (i.e. gap) ensuring strong coupling of the choke. The depth achieves the ¼ wavelength condition that is necessary to achieve ½ wavelength delay of the reflected signal.

In contrast, the power absorbing element recited in claim 1 is made of a material that is not transparent to the leakage signal, but rather absorbs the leakage signal. Accordingly, the leakage signal is attenuated through absorption, rather than reflection and superimposition of mutually canceling signals, to prevent resonance in this area of the switch from occurring.

In light of the outlined distinctions, the Applicant submits that Hettlage does not teach every element recited in claim 1 of the subject application. Accordingly, the Applicant respectfully submits that claim 1 is not anticipated by Hettlage and should be allowed. Furthermore, since claims 2 to 6 and 8 to 11 are dependent on claim 1, and introduce other patentable features, the Applicant respectfully submits that claims 2 to 6 and 8 to 11 are also allowable over Hettlage.

The Examiner has further rejected claims 1 to 11 under 35 U.S.C. 102(b) as being anticipated by Mayer (US 6,218,912). Specifically, the Examiner argued that Mayer, in FIG. 3, shows a microwave switch housing assembly for operation in a selected frequency range, comprising: a housing (1); a rotor (2) rotatably mounted within said housing; at least one waveguide passage in said rotor; said housing having ports formed therein (11-14) so that in a first position of said rotor, said waveguide passage (7-9) connects said ports and in a second position of said rotor, said waveguide passage is unconnected to said ports (FIG. 3); a power absorbing element located within one of said housing and said rotor (4 or 5) such that said power absorbing element is positioned adjacent to one end of said waveguide passage when said rotor is in said second position; said power absorbing element being capable of absorbing electromagnetic energy in said frequency range, so as to reduce the tendency of said waveguide passage to act as a volume resonator when said rotor is in said second position. The Examiner further argued that elements 4 and 5 are grooves that improve electric properties (col. 2, lines 24-27), which are analogous to the slits of Hettlage discussed above.

In response, the Applicant respectfully submits that the subject matter recited in claim 1 of the subject application can be distinguished from the subject matter taught by Mayer on the same grounds used for the subject matter taught by Hettlage since Mayer essentially uses the same principles taught by Hettlage. Firstly, at column 1, paragraph 2, Mayer characterizes the grooves as chokes. Further, these grooves are filled only with the air or atmospheric medium in which the switch is operating, and therefore operate by reflecting and canceling any leaked signals rather than by absorbing the

leaked signals. The difference in Mayer is that he is using reactive discontinuities to disrupt the leakage path to realize a choke solution that is more compact and economical to manufacture. Accordingly, the Applicant submits that Mayer's structure is different, for reasons explained above for Hettlage, from the structure and functionality claimed in claim 1 of the subject application, which was discussed above, and Mayer does not teach every element recited in claim 1 of the subject application.

Secondly, as with the chokes shown in Hettlage, the grooves taught by Mayer are designed to isolate the ports of the switch (see column 1, lines 49 to 55 in Mayer), and are not designed to prevent the unconnected waveguide passage from behaving as a volume resonator.

Accordingly, the Applicant respectfully submits that claim 1 is not anticipated by Mayer and should be allowed. Furthermore, since claims 2 to 11 are dependent on claim 1, and introduce other patentable features, the Applicant respectfully submits that claims 2 to 11 are allowable over Mayer.

**Claim Rejections - 35 USC § 103**

The Examiner has further rejected claims 1 - 11 under 35 U.S.C. 103(a) as being unpatentable over Spinner (GB 2 250 140A), in view of Hettlage et al. or Mayer. Specifically, the Examiner argues that, in FIGS. 4 to 6, Spinner shows a microwave switch housing assembly for operation in a selected frequency range, comprising: a housing (1); a rotor (4) rotatably mounted within said housing; at least one waveguide passage in said rotor; said housing having ports formed therein (A-D); a power absorbing element located within one of said housing and said rotor (11-14 or 41, 42) such that said power absorbing element is positioned adjacent to one end of said waveguide passage when said rotor is in a second position; said power absorbing element being capable of absorbing electromagnetic energy in said frequency range, so as to reduce the tendency of said waveguide passage to act as a volume resonator when said rotor is in said second position, where 11-14 or 41, 42 are slits or chokes

which improve electrical properties (column 3, paragraph 3), and are analogous to the slits of Hettlage et al. discussed above.

The Examiner notes that Spinner does not show when the rotor is rotated in a first position of said rotor, said waveguide passage connects said ports and in a second position of said rotor, said waveguide passage is unconnected to said ports. However, the Examiner does argue that both Hettlage and Mayer show a nearly identical waveguide switch comprising three channels so that in a first position of said rotor, said waveguide passage connects said ports and in a second position of said rotor, said waveguide passage is unconnected to said ports. The Examiner further argues that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the device disclosed by Spinner with the third channel disclosed by either Hettlage or Mayer.

In response, the Applicant respectfully submits that similar distinctions to those that were made between claim 1 of the subject application and the subject matter of the Mayer and Hettlage can also be made for the subject matter of Spinner. Firstly, while in some embodiments, the chokes taught by Spinner contain a lossy, capacitive or dielectric substance, the chokes are nevertheless designed to attenuate the signals by working in pairs to reflect and cancel the signals. The modifications taught by Spinner are used to more effectively place chokes in the available space, but Spinner does not deviate from their functionality as chokes. Further, Spinner does not teach that the lossy, capacitive or dielectric substances are capable of attenuating the signals by absorbing them. Rather, Spinner uses the dielectrics to reduce choke size, but this diminishes impedance match. Also, the use of the dielectrics is such that the structures taught by Spinner still satisfy the choke functionality.

Furthermore, as the switch shown in Spinner does not have an unconnected waveguide passage in any operating configuration, it follows that the chokes are designed to isolate ports, and are not designed to prevent an unconnected waveguide passage from acting as a volume resonator.

In addition, if one were to add an extra waveguide passage to the Spinner device this introduces the resonance problem, which neither exists nor is addressed in Spinner. Furthermore, the added waveguide would replace the rotor portion of Spinner's ½ wave choke, thereby creating a ¼ wave single choke. Insofar as Spinner's creative geometries are based on ½ wave structures, their functionality and the substance of the disclosure are compromised if another waveguide is added.

Accordingly, the Applicant respectfully submits that claim 1 is not obvious in light of the Spinner reference in combination with Hettlage or Mayer and should be allowed. Furthermore, since claims 2 to 11 are dependent on claim 1, and introduce other patentable features, the Applicant respectfully submits that claims 2 to 11 are allowable over the cited references.

**CONCLUSION**

In view of the foregoing comments, the Applicant respectfully submits that the application is now in condition for allowance. If the Examiner has any further concerns regarding the language of the claims or the applicability of the cited references, the Examiner is respectfully requested to contact the undersigned at 416-957-1603.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
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